National Institute of Environmental Health Sciences

Projected years lost due to disabilities (YLDs) for bacillary dysentery related to increased temperature in temperate and subtropical cities of China

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Year: 2011
Journal: Journal of Environmental Monitoring : Jem. 14 (2): 510-516

Abstract:

The impact of climate change on enteric infection has been a concern in recent years. This study aims to project disability burdens of bacillary dysentery (BD) associated with increasing temperature in different climatic zones in China. Years Lost due to Disabilities (YLDs) were used as the measure of burden of bacillary dysentery in this study. A temperate city in northern China and a subtropical city in southern China were selected as the study areas. The quantitative relationship between temperature and the number of cases in each city was base on the regression models developed in our previous studies. YLDs for bacillary dysentery in 2000 were used as the baseline data. Projection of YLDs for bacillary dysentery in 2020 and 2050 under future temperature scenarios were conducted. Demographic changes over the next 20 to 50 years in study cities were considered in the projections. Under the temperature scenarios alone, the YLDs for bacillary dysentery may increase by up to 80% by 2020 and 174% by 2050 in the temperate city and up to 75% increase in the YLDs by 2020 and a 147% increase by 2050 in the tropical city. Considering potential changes in both temperature and population size and structure, if other factors remain constant, compared with the YLDs observed in 2000, the YLDs for bacillary dysentery may double by 2020 and triple by 2050 in both the temperate and subtropical cities in China. The temperature-related health burden of enteric infection in China may greatly increase in the future if there is no effective intervention. Relevant public health strategies should be developed at an earlier stage to prevent and reduce the impact of infectious disease associated with climate change.

Source: http://dx.doi.org/10.1039/c1em10391a

Resource Description

Climate Scenario :

specification of climate scenario (set of assumptions about future states related to climate)

Other Climate Scenario

Other Climate Scenario: AOGCM

Communication:

resource focus on research or methods on how to communicate or frame issues on climate change; surveys of attitudes, knowledge, beliefs about climate change

A focus of content

Communication Audience: ☑

audience to whom the resource is directed

Health Professional

Early Warning System: ☑

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

Exposure : ☑

weather or climate related pathway by which climate change affects health

Temperature

Geographic Feature: ☑

resource focuses on specific type of geography

Other Geographical Feature

Other Geographical Feature : Subtropical;Temperate

Geographic Location: ☑

resource focuses on specific location

Non-United States

Non-United States: Asia

Asian Region/Country: China

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Infectious Disease, Morbidity/Mortality

Infectious Disease: Foodborne/Waterborne Disease

Foodborne/Waterborne Disease (other): Bacillary dysentery

Intervention: ☑

strategy to prepare for or reduce the impact of climate change on health

A focus of content

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology: ☑

type of model used or methodology development is a focus of resource

Outcome Change Prediction

Population of Concern: A focus of content

Population of Concern: ☑

populations at particular risk or vulnerability to climate change impacts

Children, Elderly

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Medium-Term (10-50 years)

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content